

GENERAL COURSE SYLLABUS - MATH1342 - STATISTICAL METHODS

Department: Mathematics and Engineering
Course Number: Math 1342
Course Title: Statistical Methods
Credit: 3 **Lecture:** 3 **Lab:** 0

Course Description: This course is a study of the methods of analyzing data, statistical concepts and models, estimation, tests of significance, introduction to analysis of variance, linear regression, and correlation.

Equal Opportunity: South Plains College strives to accommodate the individual needs of all students in order to enhance their opportunities for success in the context of a comprehensive community college setting. It is the policy of South Plains College to offer all educational and employment opportunities without regard to race, color, national origin, religion, gender, disability, or age.

Diversity Statement

In this class, the instructor will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. A diverse and inclusive workforce has never been more important to success. We are stronger, more effective, and more innovative when our workforce reflects our Nation's rich diversity and our workplace environment fosters respect, dignity, and equal opportunity.

Disability Statement: Any students who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make and necessary arrangements. Students must present appropriate verification from the SPC Disability Service Office during the instructor's office hours. Please note that instructors are not allowed to provide classroom accommodations until appropriate verification from the SPC Disability Service Office has been provided. For more information, you may contact the Disability Services Office (located in the Health & Wellness Center) at 806-716-2529 or visit <http://www.southplainscollege.edu/health/disabilityservices.php>

Core Objectives:

Communication Skills: effective development, interpretation, and expression of ideas through written, oral, and visual communication.

- Develop, interpret, and express ideas through written communication
- Develop, interpret, and express ideas through oral communication
- Develop, interpret, and express ideas through visual communication

Critical Thinking: creative thinking, innovation, inquiry, analysis, evaluation, and synthesis of information.

- Generate and communicate ideas by combining, changing, and reapplying existing information
- Gather and assess information relevant to a question
- Analyze, evaluate, and synthesize information

Empirical and Quantitative Competency Skills: the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

- Manipulate and analyze numerical data and arrive at an informed conclusion
- Manipulate and analyze observable facts and arrive at an informed conclusion

Attendance: Required, if you want to pass the class. Excessive absences (based on instructor) may result in an administrative withdrawal.

INSTRUCTOR: William D. Sanders
Ropes High School
Phone: (806) 562-4031
Email: bsanders@ropesisd.us

OFFICE HOURS: Monday-Thursday: 7:30 am – 9:30 am
Monday-Friday: 12:15 pm – 1:00 pm
(or by appointment)

TEXTS & MATERIALS: *Elementary Statistics: A Step by Step Approach*, By Allan G. Bluman 10th ed.
How to Lie With Statistics, by Darrell Huff
TI-84 Plus or Plus CE Graphing Calculator (or approved equivalent)

Student Learning Outcomes/Competencies:

Upon successful completion of this course, students will:

1. Explain the use of data collection and statistics as tools to reach reasonable conclusions.
2. Recognize, examine and interpret the basic principles of describing and presenting data.
3. Compute and interpret empirical and theoretical probabilities using the rules of probabilities and combinatorics.
4. Explain the role of probability in statistics.
5. Examine, analyze and compare various sampling distributions for both discrete and continuous random variables.
6. Describe and compute confidence intervals.
7. Solve linear regression and correlation problems.
8. Perform hypothesis testing using statistical methods.

Grades:

Each Six Weeks Grade:
Homework..... 10%
Quizzes..... 30%
Exams.....60%

Mid-Term Exam....25% of the 1st Semester Grade
Final Exam.....25% of the 2nd Semester Grade

Final Average = (1st Semester + 2nd Semester)/2

ATTENDANCE POLICY: Students are responsible for attendance via the explanations provided in the Ropes ISD Student Handbook. Students are also responsible for any combination of the following due to an absence.

- 1) Obtain work in anticipation of a school related absence.
- 2) Communicate with their peers regarding lectures, classwork, homework, and exams.
- 3) Check their email and/or text for informational posts regarding classwork or exams.
- 4) Makeup work missed due to an absence in a reasonable timeframe.

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| <ol style="list-style-type: none">(a) Do not show up to class and ask, "Did I miss anything while I was gone?"(b) Do not expect the instructor to stop or delay class to present missing work. |
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Student Learning Outcomes/Competencies

I. Descriptive Statistics (1st Six Weeks)

- A. Types of Data and Design of Experiments – 8/27
- B. Data Presentation (Graphs/Charts)– 9/3
- C. Measures of Central Tendency– 9/9
- D. Measures of Variation – 9/16
- E. Exploratory Data Analysis – 9/23

II. Regression Analysis (2nd Six Weeks)

- A. Scatterplots and Correlation – 10/1
- B. Regression and Applications of Regression – 10/14
- C. Regression Diagnostics– 10/28

III. Probability and Discrete Random Variables (3rd Six Weeks)

- A. Probability Concepts – 11/12
- B. Addition and Complement Rules – 11/25
- C. Multiplication and Conditional Rules – 12/2
- D. Binomial Rules – 12/9
- E. Discrete Probability Distributions – 12/16

IV. Normal Distribution (4th Six Weeks)

- A. Standard Normal Distribution– 1/7
- B. Probability Calculations Using the Normal Distribution – 1/14
- C. Sampling Distributions and Estimators – 1/27
- D. The Central Limit Theorem – 2/5

V. Statistical Estimation (5th Six Weeks)

- A. Point Estimates and Confidence Intervals for Proportions – 2/18
- B. Point Estimates and Confidence Intervals for Means – 3/2
- C. Finding a Necessary Sample Size under Given Conditions – 3/9

VI. Hypothesis Testing (6th Six Weeks)

- A. Steps for Hypothesis Testing – 4/7
- B. Proportion Test – 4/13
- C. 1-sample mean test – 4/20
- D. Two-mean test for independent samples – 4/27
- E. Analysis of Variance – 5/4

VIII. Technology: Calculator applications – Integrated into all units.

Comprehensive Final Statistical Project – May 2020

FINAL EXAM – May 7, 2020

FINAL GRADES DUE: May 11, 2020

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